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Claim 43 (currently amended). Endothermic catalytic reaction apparatus that includes a combustion chamber, comprising:

a) a straight tubular outer conduit concentrically disposed around an inner conduit to form a reaction chamber containing catalyst in the annular space between the outer conduit wall and the inner conduit wall, for conversion of hydrocarbon to industrial gases by reaction with steam, and an inner annular conduit defined space path for the return flow of reactant gases to an exit means; said path located between radially spaced inner and outer annular regions of catalyst in said reaction chamber, said tubular reaction chamber having one end that extends into the combustion chamber and an opposite end that extends outside of the combustion chamber, and there being inlet means for said gases that is in communication with the annular space and an exit said catalyst inner and outer regions, and wherein said exit means that is in communication with the inner conduit defined space path,

b) and a radiant burner having a heat radiating surface vertically disposed within said combustion chamber and having a gas permeable zone that promotes the flameless combustion of fuel and oxidant

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supplied to said burner in order to heat ~~the metal~~
~~fiber~~ said surface of the burner to incandescence for
radiating heat energy to the catalyst containing
reaction chamber[[.]], which extends annularly about
the burner surface,

c) and a convection chamber extending about a
portion of the reaction chamber containing inner and
outer annular regions of catalyst and in proximity to
said inlet means and to said exit means, said inner
conduit wall, said outer conduit wall and said reaction
chamber projecting annularly into said convection
chamber proximate an annular entrance of gases into the
reaction chamber.

Claim 44 (currently amended). The ~~combination~~ apparatus
of claim 43 wherein a multiplicity of said ~~tubular~~
reaction chambers are provided and are concentrically
disposed around a ~~centrally located and vertically~~
~~disposed cylindrical~~ said radiant burner having a 360
degree radiant arc.

Claim 45 (currently amended). The ~~combination~~ apparatus
of claim 43 wherein ~~there is a convection chamber~~
~~extending about a portion of the tubular reaction~~
~~chamber in the proximity of the end containing the~~

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~~reactant gas inlet and outlet means to enhance~~ said convection chamber enhances heat transfer from combustion products; said convection chamber having an inlet means that is in communication with the combustion chamber and an exit means for combustion products that is outside the combustion chamber.

Claim 46 (currently amended). The ~~combination~~ apparatus of claim 43 wherein the reaction chamber has opposite sides and including reactant gases flowing inside the inner conduit to transfer heat to the reaction chamber from said opposite sides thereof.

Claim 47 (currently amended). The ~~combination~~ apparatus of claim 43 wherein said radiant burner is comprised of a supported metal fiber material.

Claim 48 (currently amended). The ~~combination~~ apparatus of claim 43 wherein said radiant burner is comprised of a supported ceramic fiber material.